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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,285	11/13/2003	Richard Greenfield	1875.3700001	5666

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EXAMINER	
ALIA, CURTIS A	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/706,285	GREENFIELD ET AL.
	Examiner	Art Unit
	Curtis Alia	2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7 and 10-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7 and 10-13* is/are rejected.

7)☒ Claim(s) *14-16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

Applicant's amendment filed on 3 December 2007 has been entered. Claims 8-9 and 17-20 have been cancelled. Claims 1-7 and 10-16 are still pending in this application, with claims 1, 4 and 7 being independent.

Response to Arguments

1. Applicant's arguments with respect to claims 1 and 4 have been considered but are moot in view of the new ground(s) of rejection.

The statutory-type double-patenting rejection on claims 1-7 and 10-16 is withdrawn since the corresponding claims of the copending application have been cancelled.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Objections

3. Claim 14 is objected to because of the following informalities: The reference character S_{21} is not defined. It is assumed that this is meant to refer to S_2. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. Claims 1, 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura (newly cited US 6,658,024) in view of Davis (newly cited US 5,566,175).

Regarding claim 1, Okamura discloses a method comprising determining a first bit rate for symbols transmitted during the first noise phase, and a second bit rate for symbols transmitted during the second noise phase (see column 6, lines 55-65, the transmission device

receives data at a high data rate and a low data rate, where the high data rate (fast data rate) is used during periods of low noise (far end crosstalk), and the low data rate (interleaved data rate) is used during periods of high noise (near end crosstalk)) and transmitting symbols at the first bit rate during the first noise phase and at the second bit rate during the second noise phase (see column 2, lines 19-28, the SNR of both the NEXT and FEXT periods are measured and the bit rates associated with NEXT and FEXT, respectively, are determined based on each phase's SNR, as also shown in figure 3). Okamura does not explicitly teach that the first bit rate and the second bit rate are constrained such that a transmission latency does not exceed a predetermined maximum allowed transmission latency. However, the above-mentioned claimed limitation is well known in the art, as evidenced by Davis. In particular, Davis teaches of a transmission system where bandwidth is allocated for a connection, where the maximum burst of low data rate transmission is not to reach a value that will exceed the maximum allowable delay (see column 4, lines 1-4). Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention that the data transfer rate of a connection and the delay/latency of that connection are inversely proportional, where a low data rate will increase latency, and a high data rate will decrease latency, as is well-known in the art. The motivation to combine these references is that constraining the bit rate so as to limit the variance in data rate spikes will make the task of allocating the bandwidth for the connection more efficient and increase the quality of service. Since the bandwidth is allocated based on average transmission bit rate, and the fluctuation of bit rate is minimized by minimizing the latency, the bandwidth allocation would be much easier to calculate.

Regarding claim 4, Okamura discloses a constrained rate receiver for determining a first bit rate for symbols transmitted during the first noise phase, and a second bit rate for symbols transmitted during the second noise phase (see column 6, lines 55-65, the transmission device receives data at a high data rate and a low data rate, where the high data rate (fast data rate) is used during periods of low noise (far end crosstalk), and the low data rate (interleaved data rate) is used during periods of high noise (near end crosstalk)) and a constrained rate transmitter for transmitting symbols at the first bit rate during the first noise phase and at the second bit rate during the second noise phase (see column 2, lines 19-28, the SNR of both the NEXT and FEXT periods are measured and the bit rates associated with NEXT and FEXT, respectively, are determined based on each phase's SNR, as also shown in figure 3). Okamura does not explicitly teach that the first bit rate and the second bit rate are constrained such that a transmission latency does not exceed a predetermined maximum allowed transmission latency. However, the above-mentioned claimed limitation is well known in the art, as evidenced by Davis. In particular, Davis teaches of a transmission system where bandwidth is allocated for a connection, where the maximum burst of low data rate transmission is not to reach a value that will exceed the maximum allowable delay (see column 4, lines 1-4). Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention that the data transfer rate of a connection and the delay/latency of that connection are inversely proportional, where a low data rate will increase latency, and a high data rate will decrease latency, as is well-known in the art. The motivation to combine these references is that constraining the bit rate so as to limit the variance in data rate spikes will make the task of allocating the bandwidth for the connection more efficient and increase the quality of service. Since the bandwidth is allocated based on

average transmission bit rate, and the fluctuation of bit rate is minimized by minimizing the latency, the bandwidth allocation would be much easier to calculate.

Regarding claim 7, Okamura discloses a receiver being adapted to determining a first bit rate for symbols transmitted during the first noise phase, and a second bit rate for symbols transmitted during the second noise phase (see column 6, lines 55-65, the transmission device receives data at a high data rate and a low data rate, where the high data rate (fast data rate) is used during periods of low noise (far end crosstalk), and the low data rate (interleaved data rate) is used during periods of high noise (near end crosstalk)). Okamura does not explicitly teach that the first bit rate and second bit rate being constrained such that a transmission latency does not exceed a predetermined maximum allowed transmission latency. However, the above-mentioned claimed limitation is well known in the art, as evidenced by Davis. In particular, Davis teaches of a transmission system where bandwidth is allocated for a connection, where the maximum burst of low data rate transmission is not to reach a value that will exceed the maximum allowable delay (see column 4, lines 1-4). Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention that the data transfer rate of a connection and the delay/latency of that connection are inversely proportional, where a low data rate will increase latency, and a high data rate will decrease latency, as is well-known in the art. The motivation to combine these references is that constraining the bit rate so as to limit the variance in data rate spikes will make the task of allocating the bandwidth for the connection more efficient and increase the quality of service. Since the bandwidth is allocated based on average transmission bit rate, and the fluctuation of bit rate is minimized by minimizing the latency, the bandwidth allocation would be much easier to calculate.

5. Claims 2, 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura in view of Davis as applied to claims 1, 4 and 7 (respectively) above, and further in view of Yong (newly cited US 6,801,570).

Regarding claim 2, Okamura and Davis do not explicitly disclose communicating the predetermined maximum allowed transmission latency via a message to a receiver of the communications system. However, the above-mentioned claimed limitation is well known, as evidenced by Yong. In particular, Yong teaches of a rate option generator that receives a number of input parameters designating, among other things, a maximum allowed delay for communications between transceivers in the system (see column 4, lines 45-54), Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to transmit the maximum allowed transmission latency to another transceiver in the system. The motivation to send/receive a message communicating the maximum allowed transmission latency in the system of Okamura is that transceivers in the system must have the same parameters to know when to send/receive the data over the ADSL line so as to reduce/eliminate the negative effects of the TCM-ISDN crosstalk.

Regarding claim 5, Okamura and Davis do not explicitly disclose that the constrained rate transmitter further comprising a latency control transmitter for communicating the predetermined maximum allowed transmission latency via a message to the constrained rate receiver. However, the above-mentioned claimed limitation is well known, as evidenced by Yong. In particular, Yong teaches of a rate option generator that receives a number of input parameters designating, among other things, a maximum allowed delay for communications between transceivers in the system (see column 4, lines 45-54), Thus, it would have been obvious to a person having ordinary skill

ordinary skill in the art at the time of the invention to transmit the maximum allowed transmission latency to another transceiver in the system. The motivation to send/receive a message communicating the maximum allowed transmission latency in the system of Okamura is that transceivers in the system must have the same parameters to know when to send/receive the data over the ADSL line so as to reduce/eliminate the negative effects of the TCM-ISDN crosstalk.

Regarding claim 10, Okamura and Davis do not explicitly disclose that the receiver is capable of receiving a message communicating the predetermined maximum allowed transmission latency. However, the above-mentioned claimed limitation is well known, as evidenced by Yong. In particular, Yong teaches of a rate option generator that receives a number of input parameters designating, among other things, a maximum allowed delay for communications between transceivers in the system (see column 4, lines 45-54), Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to transmit the maximum allowed transmission latency to another transceiver in the system. The motivation to send/receive a message communicating the maximum allowed transmission latency in the system of Okamura is that transceivers in the system must have the same parameters to know when to send/receive the data over the ADSL line so as to reduce/eliminate the negative effects of the TCM-ISDN crosstalk.

6. Claims 3, 6 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura in view of Davis and Yong as applied to claims 2, 5 and 10 above, and further in view of Chow (newly cited US 6,009,122).

Regarding claim 3, Okamura, Davis and Yong do not explicitly disclose configuring, in accordance with the first bit rate, a first bit allocation table for symbols transmitted during the first noise phase and configuring, in accordance with the second bit rate, a second bit allocation table for symbols transmitted during the second noise phase. However, the above-mentioned claimed limitation is well known, as evidenced by Chow. In particular, Chow discloses a bit allocation table which is capable of storing bit allocation information for frames being transmitted between a transmitter and a receiver on an ADSL network (see column 4, lines 39-54, a data symbol encoder encodes bits associated with the received data based on the bit allocation table associated with the frame). Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include a bit allocation table for each carrier so as to encode the data according to the frame being transmitted on a specific carrier. The bit allocation table contains multiple bit allocation tables within, each corresponding to a carrier.

Regarding claim 6, Okamura, Davis and Yong do not explicitly disclose having a first bit allocation table controller for configuring, in accordance with the first bit rate, a first bit allocation table for symbols transmitted during the first noise phase and a second bit allocation table controller for configuring, in accordance with the second bit rate, a second bit allocation table for symbols transmitted during the second noise phase. However, the above-mentioned claimed limitation is well known, as evidenced by Chow. In particular, Chow discloses a bit allocation table which is capable of storing bit allocation information for frames being transmitted between a transmitter and a receiver on an ADSL network (see column 4, lines 39-54, a data symbol encoder encodes bits associated with the received data based on the bit

allocation table associated with the frame). Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include a bit allocation table for each carrier so as to encode the data according to the frame being transmitted on a specific carrier. The bit allocation table contains multiple bit allocation tables within, each corresponding to a carrier.

Regarding claim 11, Okamura, Davis and Yong do not explicitly disclose having a first bit allocation table controller for configuring, in accordance with the first bit rate, a first bit allocation table for symbols transmitted during the first noise phase and a second bit allocation table controller for configuring, in accordance with the second bit rate, a second bit allocation table for symbols transmitted during the second noise phase. However, the above-mentioned claimed limitation is well known, as evidenced by Chow. In particular, Chow discloses a bit allocation table which is capable of storing bit allocation information for frames being transmitted between a transmitter and a receiver on an ADSL network (see column 4, lines 39-54, a data symbol encoder encodes bits associated with the received data based on the bit allocation table associated with the frame). Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention to include a bit allocation table for each carrier so as to encode the data according to the frame being transmitted on a specific carrier. The bit allocation table contains multiple bit allocation tables within, each corresponding to a carrier.

Regarding claim 12, Okamura discloses that the first noise phase corresponds to a first signal-to-noise ratio (see figure 3, first noise phase is FEXT which has an SNR as shown in graph), and the second noise phase corresponds to a second signal-to-noise ratio (see figure 3,

second noise phase is NEXT which has an SNR as shown in graph), the second signal-to-noise ratio being higher than the first signal-to-noise ratio (see figure 3, the SNR corresponding to the FEXT noise phase is higher than the SNR corresponding to the NEXT noise phase), further comprising a second bit rate controller for determining the second bit rate based on the second signal-to-noise ratio (see column 2, lines 32-39, the data transmission is executed according to a bit distribution which has been determined based on the measurement of the SNR).

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamura in view of Davis, Yong and Chow as applied to claim 12 above, and further in view of Amrany et al. (newly cited US 6,580,752).

Regarding claim 13, Okamura, Davis, Yong and Chow do not explicitly disclose a first bit rate controller for determining the first bit rate based on the second bit rate and the pre-determined maximum allowed transmission latency. Davis does teach determining a bit rate based on a maximum allowed transmission latency. However, the above-mentioned claimed limitation is taught by Amrany. In particular, Amrany teaches the use of a trial bitmap mode, wherein the bitrate of each of FEXT and NEXT are determined by the SNR of each phase, respectively, then the composite SNR is used to determine the maximum bit rate to be used on the ADSL line (see column 7, line 39 to column 8, line 6). Thus, it would have been obvious to a person having ordinary skill in the art at the time of the invention that the bit rate (or at least the maximum bitrate) can be determined from a number of operating parameters, such as bit rate of either NEXT or FEXT phases (determined by SNR), and maximum transmission latency (as taught by Davis). The motivation to combine the teachings of Amrany is that the choosing

between single, dual, and trial bitmap modes offers greater adaptation for different loop lengths and crosstalk effect.

Allowable Subject Matter

8. Claims 14-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis Alia whose telephone number is (571) 270-3116. The examiner can normally be reached on Monday through Friday, 8am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Aung S. Moe can be reached on (571) 272-7314. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CAA

AUNG S. MOE
SUPERVISORY PATENT EXAMINER
2/19/08